

(No Model.)

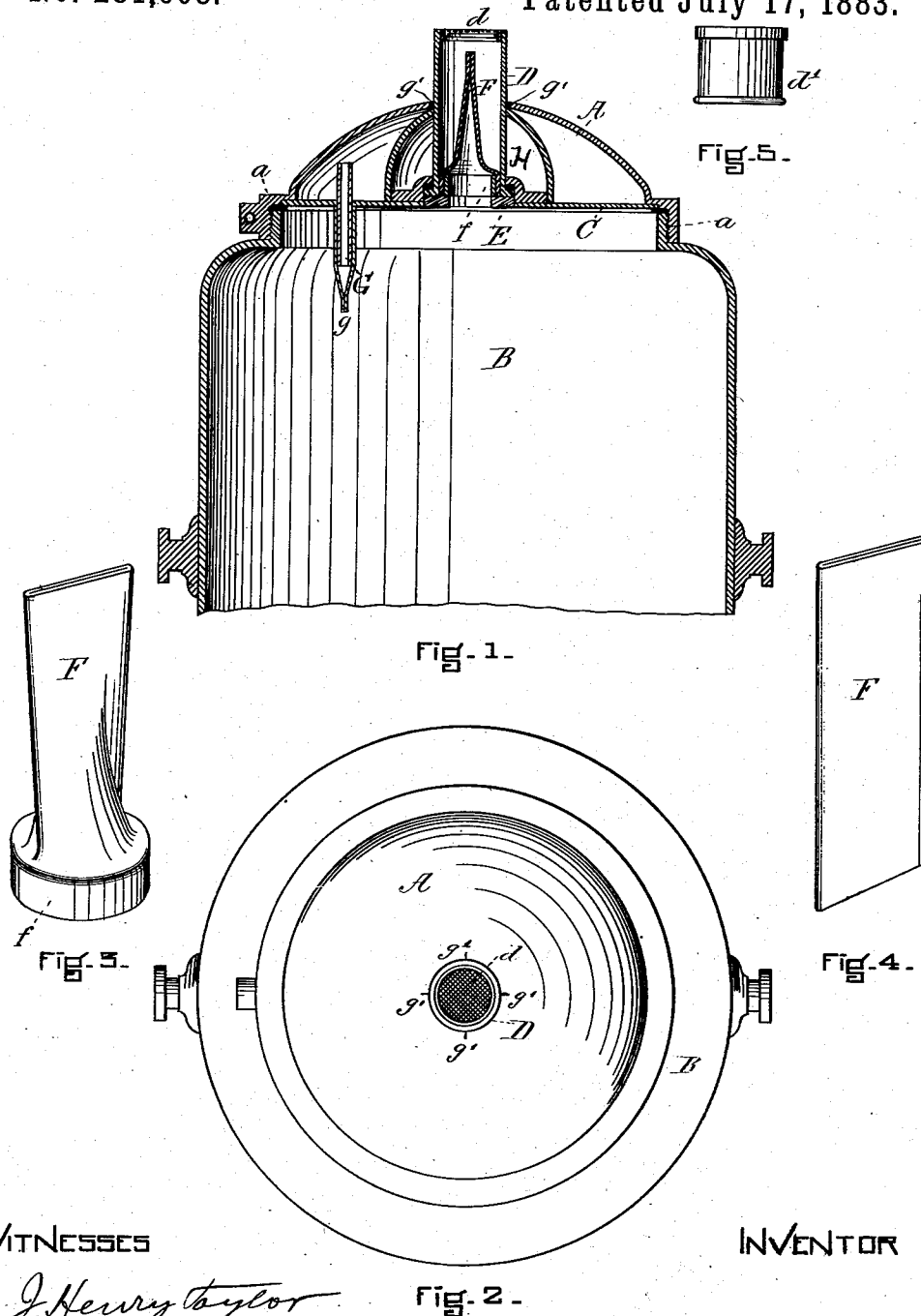
3 Sheets—Sheet 1.

A. P. BROWNE.

LOCK STOPPER FOR MILK CANS.

No. 281,608.

Patented July 17, 1883.



WITNESSES

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James F. Bligh

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Alex. P. Browne

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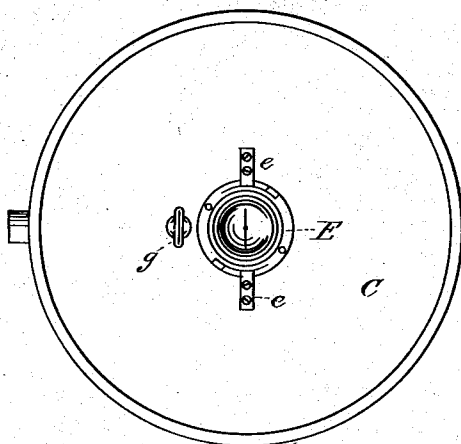


Fig. 6.

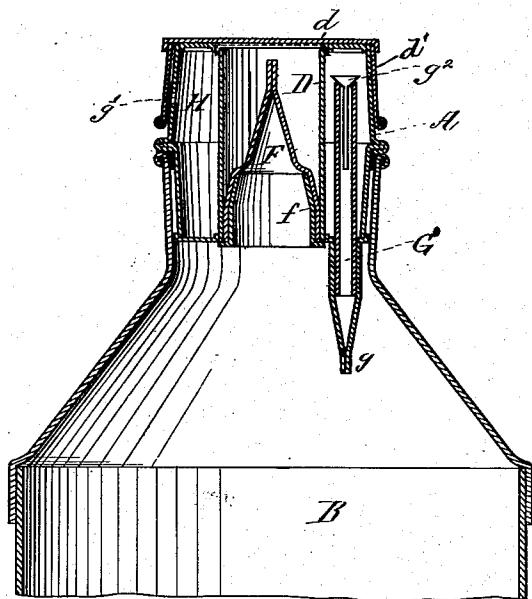


Fig. 7.

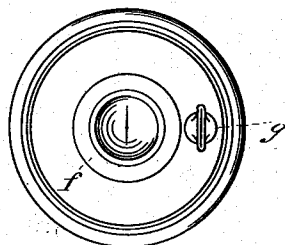


Fig. 8.

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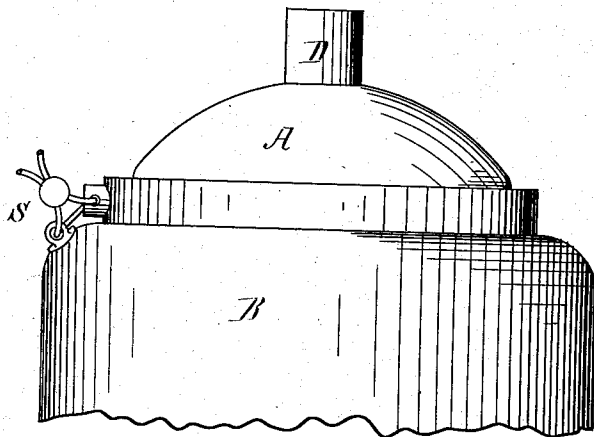


Fig. 9-

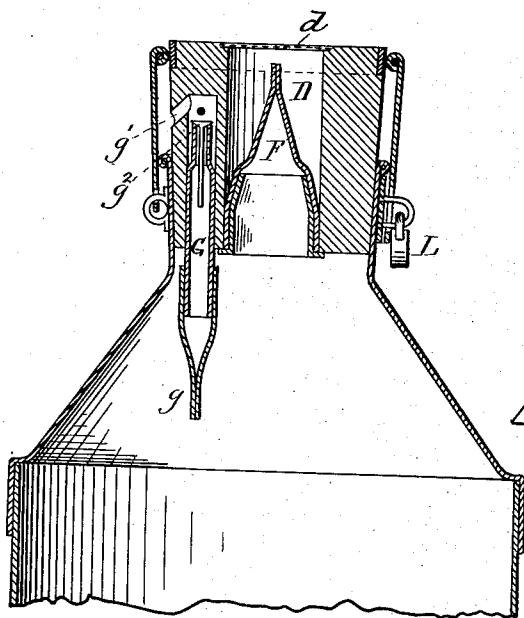


Fig. 10.

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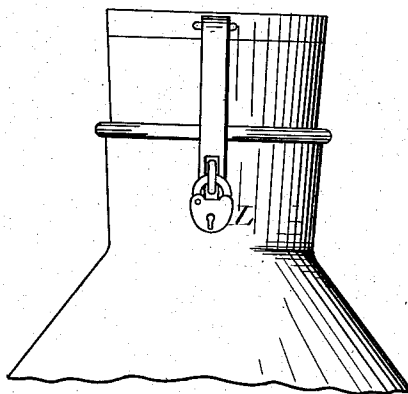


Fig. 11.

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UNITED STATES PATENT OFFICE.

ALEXANDER P. BROWNE, OF BOSTON, ASSIGNOR TO HIMSELF, AND EDWARD BURNETT, OF SOUTHBOROUGH, MASSACHUSETTS.

LOCK-STOPPER FOR MILK-CANS.

SPECIFICATION forming part of Letters Patent No. 281,608, dated July 17, 1883.

Application filed March 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALEX. P. BROWNE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lock-Stoppers for Milk-Cans and Similar Vessels, of which the following is a specification.

The lock-stoppers for milk-cans and similar vessels heretofore used have consisted commonly of solid stoppers or plugs of wood or metal of the general external shape shown in the drawings herein, which tightly close the mouth of the can, and are secured in place by means of a padlock or seal in several well-known ways. Such stoppers, as is evident, prevent any pouring out from the can without opening the lock or seal and removing the stopper. Such an opening of the lock or seal and removal of the stopper evidently affords opportunity for adulteration, and it is therefore desirable to so form the lock-stopper for milk-cans and similar vessels that while the stopper remains locked in its place in the mouth of the can the liquid contents thereof may still be poured out by means of a conduit through the said stopper, which is opened by the outflowing liquid, but is kept closed at all other times whatever be the position of the can. I accomplish this by constructing the stopper substantially in the manner shown in the accompanying drawings, which show two forms in which my improved stopper may be made.

In the drawings, Figure 1 is a vertical section, and Fig. 2 a plan, of a can embodying my invention. Figs. 3 and 4 show the valve and valve-tube; Fig. 5, cap for outlet-tube; Fig. 6, under side of plate; Fig. 9, can with a locking means. Figs. 7, 8, 10, and 11 show modifications.

The stopper itself may be made of any suitable material. It is constructed to fit the mouth of the can either by overlapping its mouth, as shown in Fig. 1, or by fitting inside, as shown in Fig. 7. A conduit or educt-pipe passes through the stopper, by means of which the milk or other liquid may flow out. The passage through this pipe is controlled by a spring-valve, which closes the passage, except when opened by the pressure of liquid in outpouring.

The closure of the can by the stopper may

be made practically tight and yet admit sufficient air to allow pouring out; but it will be found desirable to provide a special air tube or vent, and this may be conveniently placed within the stopper, and its opening may be valved, as hereinafter described.

The form of stopper shown at Figs. 1 and 2 is primarily intended for a milk-can of well-known form, as shown, and is constructed as follows:

A is a dome having a flanged screw-threaded extension to engage with the mouth of the can.

C is a plate set within the dome A and closing the mouth of the can. Through the plate C and dome A passes a pipe or conduit, D, which is closed by the spring-valve F, constructed of a piece of rubber tubing vulcanized flat, as shown at Fig. 4, the end which goes next the interior of the can being distended by the insertion of a collar, *f*, of suitable material. Such a spring-valve will normally retain the position shown in Figs. 1 and 3, the end or lips opposite the distended end being kept closed by the spring action of the walls of the flattened tube. The valve F is made of sufficient length to give a good closing at the outer end, as shown.

The collar and valve are pressed into the tube D from the inside, and to prevent their accidental removal a locking-ring, E, and locking-arms, *e*, are arranged as shown in Fig. 6.

The operating-faces of these arms *e*, which bear against the face of the locking-ring E, have a transverse bevel, and those portions of the ring E against which these beveled faces of the arms *e* are to operate have also two beveled or inclined recesses cut in them. At the lower end of each of these recesses the ring E has a slot or channel cut in and across its periphery of a width equal to the width of the arm *e* and of a depth equal to the amount of projection of the arm *e* over the ring E. To insert the locking-ring E these slots are set opposite the arms *e e*. The ring E is then pushed in and is gradually turned, whereby the opposite inclines of the opposed portions of the arms *e* and the wedge-shaped recesses in the ring E produce jointly a locking or wedging action, and thereby firmly secure the ring E in place.

To prevent opening or otherwise tampering

with the valve from the outside, a finely-perforated screen, d , covers the external end of the pipe D. A sliding cover or cap, d' , Fig. 5, covers the end of the pipe to prevent premature or accidental outflow and keep out dirt, &c. The air-tube G passes through the plate C into the air-chamber H, which connects with the outer air by minute slits, g' , in the dome A. (See Fig. 2.) Its lower end may be covered by a valve, g , similar to the valve F. Figs. 7 and 8 show another form of the stopper adapted to enter and close the mouth of a milk-can of another well-known form. As shown in Fig. 7, the stopper A forms a plug, which fits into and closes the mouth of the can. The passage D through the stopper is closed by the spring-valve F, with its collar f , which is inserted into the inner end of the tube or passage D, the outer end of which is covered with a perforated plate, d , as before, and a cup or cover, d' , fits over the whole, as shown. The air-tube in this form of stopper connects with the outer air by the aperture g' , Fig. 7. The upper end of this tube may also be provided with a valve, g^2 , as shown.

As another means of preventing premature emptying of the contents of the can, the mouth of the orifice by which air is conveyed to the interior of the can may be covered with a frangible air-excluding seal, preferably in the form of a paper label. So long as this seal is in place it is obvious that little or no milk can be poured out, and loss of milk by accident or otherwise is prevented until the seal has been removed or broken. In the drawings, Fig. 7, a seal of this sort is shown in place covering aperture g' .

It is obvious that the above construction may be widely departed from in many matters of detail. For example, the stopper may be made solid throughout, except the tube D, and a suitable passage for air to supply the air-vent. This is especially true of the form shown in Figs. 7 and 8, which may be a solid block suitably bored to provide a passage, D, for the milk, and for an air-supply if the latter is desired to be introduced through the stopper.

Where the solid block is used the passage through the air-tube G from the outside to the can should always be suitably guarded. For example, the tack-valve shown at g^2 in Fig. 7 may be employed to close the passage when the can is upright. When the solid block stopper of the form shown in Fig. 1 is employed, the outer extremity of the passage for the air-supply should be made as small in area as the slots g' , shown in Figs. 1 and 3, and for the same reason as hereinbefore set forth—viz., in this way again to prevent the introduction of any material quantity of adulterant by way of the air-supply passage. When the solid stopper of the form shown in Fig. 7 is employed, the passage for the air-supply, instead of being an annular chamber, as shown, is preferably to be formed by boring nearly through

the stopper from its inside end and then boring laterally through the side of the stopper to connect with the passage, as formed. The height of this lateral passage should be different from that of the valve g^2 , in order that this valve may not be accessible from without through the lateral passage described. The angular or bent air-passage thus formed by the two borings in the hollow stopper will furnish a means for the admission of air, and at the same time by its angularity prevent tampering with the valve g^2 . This structure is shown in section at Fig. 10.

The external end of the tube D may be carried out and bent, so as thereby to prevent the successful introduction of any tool to open the spring-valve F, in which case the perforated plate d may be dispensed with, or it may be retained to serve merely as a strainer. The fastening or securing of the valve F and its collar f within the conduit D may be accomplished in any desired manner.

The office of the spring-valve F is to keep the passage D closed, except when opened by the pressure of the outflowing liquid. The use of such a valve for this purpose is an important improvement upon the gravity-valve heretofore used in stoppers of this character, for the reason that the gravity-valve operates independently of the flow of liquid and is necessarily always open when the can is in certain positions—for example, wholly or partly inverted, although no liquid be flowing out. Inasmuch as an adulterant or adulterated fluid may be readily introduced into the can through the open valve while in such a position, the security given by a lock-stopper containing such a valve is evidently very slight. The valve which I employ, however, being virtuous of its peculiar construction always closed, except during outflow, as above explained, entirely obviates this defect, and by its means the stopper is rendered absolutely effective for the purposes for which it is intended—viz., to prevent adulteration.

The form of valve shown herein possesses in a high degree the advantages of cheapness, simplicity, and certainty of action, owing to its being free from any liability to fail to seat, and its great sensitiveness, which allows the liquid contents of the can to be removed to a degree that might not be attained in spring-valves of less sensitiveness.

One peculiarity and advantage of my improved stopper is that it outwardly conforms in shape and size to those now commonly used, and consequently may be readily locked into the cans and other vessels now in common use.

The form of stopper shown in Fig. 1 is intended to be fastened against removal by a wire passing the hole in the lug or projection shown on the stopper near the letter a' , said wire being also passed through a staple soldered to the can itself near its mouth, and the two ends of the wire being then secured by a seal in the ordinary manner. (This is illus-

trated in Fig. 9, S denoting the seal.) Fig. 7 shows a form of stopper which is intended to be secured in the can by means of a metal strap of suitable form hinged to the body of the can, which is brought over the stopper after it is in place and then secured by means of a slot in the end of said metal strap, being passed over a staple soldered to the can and padlocked in this position. This construction is shown in section at Fig. 10 and in front elevation at Fig. 11, in which L is the lock. Besides these methods any other of the common and well-known means of locking can-stoppers in place may be used, care being taken that the particular devices chosen are so arranged and applied as not to interfere with the pouring-out function of the stopper when locked.

The spring-valve *g* operates to permit the inflow of air, but prevent the outflow of milk through the air-tube G. It may be replaced by a gravity-valve opening when the vessel is inverted only to a degree sufficient to allow the inflow of air, but prevent any material outflow of milk. A gravity-valve, *g'*, may be used to prevent the introduction of liquid into the can through the air-tube if the can should be immersed mouth up in an adulterant.

I claim—

1. A lock-stopper adapted to cover and close the mouths of milk-cans and other vessels, said stopper being provided with means whereby it may be locked or secured against removal, substantially as set forth, and containing the outpouring-passage D and the outwardly-opening automatic spring-valve F, substantially as set forth, and with means, substantially as described, for preventing external interference with the normal action of said valve and passage, all substantially as herein described, and for the purpose set forth.

2. A lock-stopper adapted to cover and close the mouths of milk-cans and other vessels, said stopper being provided with means whereby it may be locked or secured against removal, substantially as set forth, and containing the outpouring-passage D and the outwardly-opening automatic spring-valve F, substantially as set forth, and with a suitable air-tube, G, located within said stopper, said air-tube being provided with a valve, *g*, to admit air to the interior of the vessel and prevent the outflow of milk or other liquid from the vessel through the said air-tube when the vessel is inverted, all substantially as described, and for the purpose set forth.

3. A lock-stopper adapted to cover and close the mouths of milk-cans and other vessels, said stopper being provided with means whereby it may be locked or secured against removal, substantially as set forth, and containing the outpouring-passage D and the outwardly-opening automatic spring-valve F, substantially as set forth, and with a suitable air-tube, G, located within said stopper, said air-tube being provided with a valve, *g*, to admit air to the interior of the vessel and prevent the outflow of milk or other liquid from the vessel through the said air-tube when the vessel is inverted, and having the external orifice of the air-passage covered with a frangible air-excluding seal for cutting off the air-supply, and thereby preventing the outflow of liquid through the passage D while the seal covering said air-supply remains in place and unbroken.

ALEX. P. BROWNE.

Witnesses:

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